

# BIOTIC COMMUNITY

## Fish Communities

Fish community data were collected by Missouri Department of Conservation (MDC) staff from 42 sites throughout the basin during 1988-1989 (Table 11). Fish were collected using a seine 15 or 25 feet long with 1/8" mesh. Kick seine methods were used to sample riffles. A boat-mounted electrofishing unit was used where possible to sample deep pools. Large fish were identified on site and returned to the water. Small fish were preserved and later identified in the lab. Data collected prior to 1988 were obtained from the MDC database (Pflieger, unpublished).

A total of 63 fish species from 13 families has been collected in the Fabius River basin (Table 12). Fifty-eight species and several *Lepomis* hybrids were found in recent surveys. From a basin-wide perspective, the community includes fishes representative of the Prairie, Lowland, Ozark, and Big River faunal regions. According to Pflieger (1971), one-third are wide-ranging, 17% are Big River species, 27% are Prairie species, 27% are Ozark species, and 9% are representative of the Lowlands. Several species are associated with more than one faunal region, so the sum of these percentages exceeds 100%. Six species associated with both Prairie and Ozark streams accounted for 6.5% of the total number of fish collected in 1988-1989.

The dominant fish families were the minnows (Cyprinidae, 20 species), perches (Percidae, 9 species), sunfishes (Centrarchidae, 7 species), suckers (Catostomidae, 7 species), and catfishes (Ictaluridae, 7 species). The most common and abundant species collected in recent surveys was the red shiner (*Cyprinella lutrensis*), which comprised 31 to 38% of the total sample in each sub-basin and occurred at 95% of all sites. The bluntnose minnow (*Pimephales notatus*) was the second most abundant species, comprising 11 to 20% of the total sample in each sub-basin and occurring at 86% of all sites.

Other commonly occurring species (found in at least 60% of all sites) included quillback (*Carpiodes cyprinus*), creek chub (*Semotilus atromaculatus*), bigmouth shiner (*Notropis dorsalis*), sand shiner (*Notropis stramineus*), central stoneroller (*Campostoma anomalum*), johnny darter (*Etheostoma nigrum*), green sunfish (*Lepomis cyanellus*), and orangespotted sunfish (*Lepomis humilis*).

Sport fish (16 species that provide angling opportunity) comprised 10% of all fish collected in basin streams. Due to their large size, these fishes were under-represented numerically because they were not fully vulnerable to our sampling gear. Green sunfish were the most abundant species in this group and were found at nearly all sample sites. Channel catfish (*Ictalurus punctatus*), the most popular game species in the basin, were found at 38% of the sites, but accounted for fewer than 1% of the total fish collected. Smallmouth bass (*Micropterus dolomieu*) were also collected at 38% of the sample sites and were more than twice as abundant as largemouth bass (*M. salmoides*). Bullheads (*Ameiurus* spp.), bluegill (*Lepomis macrochirus*), carp (*Cyprinus carpio*), and white crappie (*Pomoxis annularis*) were abundant in parts of the basin as well. Limited age and growth data for bluegill, white crappie, smallmouth bass,

largemouth bass, channel catfish, and flathead catfish (*Pylodictis olivaris*) are available from the Missouri Department of Conservation, Hannibal, Missouri.

Five species found in the basin prior to 1988 and not found in recent surveys include the striped shiner (*Luxilus chrysocephalus*), last collected in 1941; Mississippi silvery minnow (*Hybognathus nuchalis*), last collected in 1941; American eel (*Anguilla rostrata*), last collected in 1975; blackstripe topminnow (*Fundulus notatus*), last collected in 1941; and logperch (*Percina caprodes*), last collected in 1979. Striped shiners and Mississippi silvery minnows have been extirpated from the basin. Similar declines of these two species have occurred in other northeastern Missouri streams, including the Mississippi River (Pflieger 1975, Hrabik 1992). Reasons for the declines are not well understood; however, these species prefer clear water and seem intolerant of high turbidity (Pflieger 1997). Logperch also avoid continuously turbid or silty streams.

Species collected in 1988-1989 that were not found by previous investigators include the goldeye (*Hiodon alosoides*), speckled chub (*Extrarius aestivalis*), channel shiner (*Notropis wickliffi*), spotfin shiner (*Cyprinella spiloptera*), mosquitofish (*Gambusia affinis*), and the western sand darter (*Ammocrypta clara*). With the exception of the western sand darter, these species are tolerant of high turbidity. One western sand darter was collected from a site in the Middle Fabius River.

The South Fabius sub-basin yielded the most species (49), followed by the Middle Fabius (43), and North Fabius (40). Thirty-five species were collected from a single site on the Fabius River. The proportions of species associated with each faunal region were similar for the three main sub-basins. The most apparent difference between the sub-basins was that Ozark species were generally more abundant and widely-distributed in the Middle and South Fabius drainages than in the North Fabius sub-basin. Less of the North Fabius sub-basin lies in the region of thin till and exposed rock than the other two sub-basins, and it has been more severely degraded.

### **Fish Contamination Levels and Health Advisories**

Fish from the basin have not been tested for contaminants and no health advisories have been issued specifically for the basin. However, the Fabius River basin is included in the limited consumption advisory (one pound per week) for fatty fish (e.g. catfish, carp, buffalo, drum, suckers, paddlefish) for all of Missouri outside of the Ozark region.

### **Aquatic Invertebrate Communities**

Limited mussel surveys have been conducted in the basin. Buchanan (1992) surveyed the North, Middle, and South Fabius rivers in 1991 while determining the status of the endangered winged mapleleaf (*Quadrula hagosa*). He reported 24 mussel species from the basin (Table 13). In limited crayfish surveys, only two species have been recorded (golden crayfish, *Orconectes luteus* and northern crayfish, *Orconectes virilis*; Missouri Department of Conservation records, S. Bruenderman, personal communication). Other species are likely to occur in basin streams.

The Missouri Department of Natural Resources initiated a quantitative study of aquatic insects in reference streams throughout the state in 1992. The Middle Fabius River was surveyed in 1993 (C. Rabeni, Missouri Cooperative Fish and Wildlife Research Unit, personal communication). Seventy genera representing seven orders were collected (Table 14).



Table 11. Fish sampling site locations in the Fabius River watershed, 1988-1989.

North Fabius Fish Sampling Sites		Middle Fabius Fish Sampling Sites		South Fabius Fish Sampling Sites	
Station Number	Legal Description	Station Number	Legal Description	Station Number	Legal Description
10	nw¼35 66n13w	26	ne¼23 65n13w	42	ne¼06 61n10w
9	sw¼406 66n13w	25	n½08 64n12w	41	n½13 60n09w
8	sw¼405 66n14w	24	se¼04 64n13w	40	ne¼23 59n07w
7	e½05 66n12w	23	s½09 65n14w	39	se¼14 62n12w
6	se¼31 66n12w	22	ne¼28 64n12w	38	nw¼18 63n12w
5	ne¼27 65n11w	21	ne¼12 64n12w	37	nw¼03 62n12w
4	ne¼19 64n10w	20	se¼13 63n12w	36	ne¼16 60n10w
3	se¼16 61n07w	19	ne¼02 62n11w	35	ne¼08 60n10w
2	e½1960n06w	18	se¼04 62n10w	34	ne¼36 61n11w
Fabius River at>	<Soulard Access	17	e½10 62n10w	33	ne¼11 59n09w
1	se¼19 59n05w	16	se¼01 62n10w	32	sw¼03 58n07w
		15	n½14 63n11w	31	sw¼21 59n08w
		14	s½09 62n09w	30	nw¼21 59n06w
		13	se¼03 61n08w	29	se¼16 61n12w
		12	s½24 60n07w	28	nw¼33 61n11w
		11	nw¼05 60n07w	27	ne¼29 60n10w

Table 12. Fish species occurrence and status as of 1989 in the Fabius River basin. C = Common; E=Extirpated; LA = Locally Abundant; R = Rare; U = Uncommon.

Species	Collected Prior to 1988	Collected Recently	Current Status
Shortnose gar			
<i>Lepisosteus platostomus</i>	X	X	LA
Longnose gar			
<i>Lepisosteus osseus</i>	X	X	LA
Goldeye			
<i>Hiodon alosoides</i>		X	U
Gizzard shad			
<i>Dorosoma cepedianum</i>	X	X	LA
Bigmouth buffalo			
<i>Ictiobus cyprinellus</i>	X	X	LA
Smallmouth buffalo			
<i>Ictiobus bubalus</i>	X	X	LA
Quillback			
<i>Carpoides cyprinus</i>	X	X	C
River carpsucker			
<i>Carpoides carpio</i>	X	X	C
White sucker			
<i>Catostomus commersoni</i>	X	X	LA
Golden redhorse			
<i>Moxostoma erythrurum</i>	X	X	C
Shorthead redhorse			
<i>Moxostoma macrolepidotum</i>	X	X	C
Common carp			
<i>Cyprinus carpio</i>	X	X	C
Hornyhead chub			
<i>Nocomis biguttatus</i>	X	X	R
Speckled chub			
<i>Extrarius aestivalis</i>		X	U
Silver chub			
<i>Macrhybopsis storeriana</i>	X	X	R
Creek chub			
<i>Semotilus atromaculatus</i>	X	X	C
Bigmouth shiner			
<i>Notropis dorsalis</i>	X	X	C
Channel shiner			
<i>Notropis wickliffi</i>		X	R
Emerald shiner			
<i>Notropis atherinoides</i>	X	X	LA
Ghost shiner			
<i>Notropis buechanani</i>	X	X	R
Golden shiner			
<i>Notemigonus crysoleucas</i>	X	X	C
Red shiner			
<i>Cyprinella lutrensis</i>	X	X	C
Redfin shiner			
<i>Lythrurus umbratilis</i>	X	X	C
River shiner			
<i>Notropis blennioides</i>	X	X	R

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Species	Collected Prior to 1988	Collected Recently	Current Status
Sand shiner			
<i>Notropis stramineus</i>	X	X	C
Spotfin shiner			
<i>Cyprinella spiloptera</i>		X	R
Striped shiner			
<i>Luxilus chrysocephalus</i>	X		E
Bluntnose minnow			
<i>Pimephales notatus</i>	X	X	C
Bullhead minnow			
<i>Pimephales vigilax</i>	X	X	C
Mississippi silvery minnow			
<i>Hybognathus nuchalis</i>	X		E
Fathead minnow			
<i>Pimephales promelas</i>	X	X	C
Suckermouth minnow			
<i>Phenacobius mirabilis</i>	X	X	C
Central stoneroller			
<i>Campostoma anomalum</i>	X	X	C
Channel catfish			
<i>Ictalurus punctatus</i>	X	X	C
Black bullhead			
<i>Ameiurus melas</i>	X	X	LA
Yellow bullhead			
<i>Ameiurus natalis</i>	X	X	LA
Flathead catfish			
<i>Pylodictis olivaris</i>	X	X	LA
Stonecat			
<i>Noturus flavus</i>	X	X	R
Tadpole madtom			
<i>Noturus gyrinus</i>	X	X	U
Slender madtom			
<i>Noturus exilis</i>	X	X	U
American eel			
<i>Anguilla rostrata</i>	X		R
Blackstripe topminnow			
<i>Fundulus notatus</i>	X		R
Mosquitofish			
<i>Gambusia affinis</i>		X	U
White bass			
<i>Morone chrysops</i>	X	X	LA
Sauger			
<i>Stizostedion canadense</i>	X	X	LA
Walleye			
<i>Stizostedion vitreum</i>	X	X	LA
Slenderhead darter			
<i>Percina phoxocephala</i>	X	X	C
Logperch			
<i>Percina caprodes</i>	X		R

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Species	Collected Prior to 1988	Collected Recently	Current Status
Western sand darter <i>Ammocrypta clara</i>		X	R
Johnny darter <i>Etheostoma nigrum</i>	X	X	C
Bluntnose darter <i>Etheostoma chlorosomum</i>	X	X	R
Orangethroat darter <i>Etheostoma spectabile</i>	X	X	U
Fantail darter <i>Etheostoma flabellare</i>	X	X	U
Slough darter <i>Etheostoma gracile</i>	X	X	R
Smallmouth bass <i>Micropterus dolomieu</i>	X	X	LA
Largemouth bass <i>Micropterus salmoides</i>	X	X	LA
Green sunfish <i>Lepomis cyanellus</i>	X	X	C
Orangespotted sunfish <i>Lepomis humilis</i>	X	X	C
Bluegill <i>Lepomis macrochirus</i>	X	X	LA
Black crappie <i>Pomoxis nigromaculatus</i>	X	X	U
White crappie <i>Pomoxis annularis</i>	X	X	C
Brook silverside <i>Labidesthes sicculus</i>	X	X	U
Freshwater drum <i>Aplodinotus grunniens</i>	X	X	LA
Hybrid sunfish <i>Lepomis spp.</i>		X	

Table 13. Mussel species occurrence in the Fabius River basin (from Buchanan 1992).

Species	North Fabius	Middle Fabius	South Fabius
Paper floater ( <i>Anodonta imbecilis</i> )			X
Flat floater ( <i>Anodonta suborbiculata</i> )			X
Giant floater ( <i>Anodonta grandis grandis</i> )		X	X
Stout floater ( <i>Anodonta g. corpulenta</i> )	X		
Squaw foot ( <i>Strophitus undulatus undulatus</i> )	X	X	X
White heelsplitter ( <i>Lasmigona complanata</i> )		X	X
Washboard ( <i>Megaloniaias nervosa</i> )	X	X	
Buckhorn - Pistolgrip ( <i>Tritogonia verrucosa</i> )	X	X	X
Mapleleaf ( <i>Quadrula quadrula</i> )	X	X	X
Wartyback ( <i>Quadrula nodulata</i> )	X	X	
Pimpleback ( <i>Quadrula pustulosa</i> )			X
Three-ridge ( <i>Amblema plicata</i> )	X	X	X
Pigtoe ( <i>Fusconaia flava</i> )			X
Threehorn wartyback ( <i>Obliquaria reflexa</i> )	X	X	X
Mucket ( <i>Actinonaias ligamentina carinata</i> )			X
Deertoe ( <i>Truncilla truncata</i> )	X	X	
Fawnfoot ( <i>Truncilla donaciformis</i> )	X	X	X
Fragile papershell ( <i>Leptodea fragilis</i> )	X	X	X
Pink heelsplitter ( <i>Potamilus alatus</i> )	X	X	X
Pink papershell ( <i>Potamilus ohienis</i> )	X	X	X
Lilliput shell ( <i>Toxolasma parvus</i> )	X	X	
Slough sandshell ( <i>Lampsilis teres teres</i> )	X	X	X
Fat mucket ( <i>Lampsilis radiata luteola</i> )		X	X
Pocketbook ( <i>Lampsilis ventricosa</i> )	X	X	X
<b>Total Species</b>	<b>17</b>	<b>19</b>	<b>19</b>

Table 14. Aquatic insect occurrence in the Middle Fabius River, 1993.  
(from C. Rabeni, pers. comm.). Number collected in parentheses.

Order Plecoptera (stoneflies):	Order Diptera (true flies):
<i>Hydroperla</i> (5)	<i>Simulium</i> (17)
<i>Taeniopteryx</i> (2)	<i>Cnephia</i> (9)
<i>Allocapnia</i> (1)	<i>Chrysops</i> (1)
	<i>Ceratopogonidae</i> , genus unknown (24)
Order Ephemeroptera (mayflies):	<i>Hemerodromia</i> (1)
<i>Stenonema</i> (150)	<i>Hydrobeanus</i> (14)
<i>Baetisca</i> (20)	<i>Cricotopus</i> (7)
<i>Tricorythodes</i> (99)	<i>Polypedilum</i> (88)
<i>Caenis</i> (174)	<i>Lipiniella</i> (23)
<i>Leptophlebia</i> (5)	<i>Glyptotendipes</i> (1)
<i>Baetis</i> (6)	<i>Paratendipes</i> (1)
<i>Hexagenia</i> (2)	<i>Hyporhygma</i> (1)
<i>Isonychia</i> (11)	<i>Paraphaenocladius</i> (1)
<i>Brachycercus</i> (7)	<i>Cryptochironomus</i> (1)
<i>Paraleptophlebia</i> (3)	<i>Orthocladius</i> (1)
<i>Stenocron</i> (18)	<i>Oliveridia</i> (1)
	<i>Rheocrirotopus</i> (1)
Order Trichoptera (caddisflies)	<i>Thienemanniella</i> (1)
<i>Cheumatopsyche</i> (86)	<i>Paratanytarsus</i> (4)
<i>Ptilostomis</i> (1)	<i>Thienemannimyia</i> (15)
<i>Nectopsyche</i> (88)	<i>Larsia</i> (2)
<i>Hydroptila</i> (1)	<i>Stictochironomus</i> (34)
<i>Oecetis</i> (1)	<i>Dicrotendipes</i> (3)
<i>Pynopsyche</i> (4)	<i>Chironomus</i> (1)
	<i>Robakia</i> (1)
Order Odonata (damselflies and dragonflies)	<i>Tribelos</i> (1)
<i>Enallagma</i> (7)	<i>Nanocladius</i> (5)
<i>Progomphus</i> (12)	<i>Ablabesmyia</i> (13)
<i>Calopteryx</i> (3)	<i>Labrundinia</i> (4)
<i>Hydaticus</i> (1)	<i>Cladotanytarus</i> (8)
<i>Hetaerina</i> (4)	<i>Rheotanytarus</i> (62)
<i>Boyeria</i> (1)	<i>Micropsectra</i> (3)
<i>Macromia</i> (1)	
<i>Argia</i> (2)	
<i>Gomphus</i> (1)	
Order Coleoptera (beetles)	Order Hemiptera (true bugs)
<i>Helichus</i> (4)	<i>Trichocorixa</i> (72)
<i>Stenelmis</i> (26)	<i>Belastoma</i> (1)
<i>Hydroporus</i> (7)	<i>Rheumatobates</i> (1)
<i>Dubiraphia</i> (9)	
<i>Macronychus</i> (1)	
<i>Salpinidae</i> , genus unknown (1)	